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ABSTRACT

The Monitoring the Future project was created to assess the changing lifestyles, values, and preferences of American youth on a continuing basis. Trends in marijuana use and related attitudes were investigated, and alternative hypotheses about the linkage between attitudes and behaviors were examined. Data were obtained using questionnaires administered to nationwide samples of approximately 17,000 high school seniors annually from 1976 through 1985. Trend data showed that perceived risks and personal disapproval increased steadily from 1978 onward, whereas actual use of marijuana reached peak levels in 1978-79 and then declined during the early 1980s. Subgroup trend analyses revealed that when attitudes were held constant there was no decline in rate of marijuana use, supporting the hypothesis that the overall decline found in the total samples was attributable to changes in perceived risk and disapproval. Reversing the subgroup trend analysis procedure, by holding constant the levels of use, provided no support for the alternative hypothesis that changes in use caused the trends in attitudes. The findings are useful theoretically because they indicate that in this area attitudes seem to shape behaviors, rather than the reverse. For those involved in prevention efforts, the findings suggest that realistic information about risks and consequences can play an important role in reducing the demand for drugs. (Author/NB)

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paper 19

CHANGES IN MARIJUANA USE LINKED TO CHANGES IN PERCEIVED RISKS AND DISAPPROVAL

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Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth

As its title suggests, this study is intended to assess the changing lifestyles, values, and preferences of American youth on a continuing basis. Each year since 1975 about 17,000 seniors have participated in the annual survey, which is conducted in some 130 high schools nationwide. In addition, subsamples of seniors from previously participating classes receive follow-up questionnaires by mail each year.

This Occasional Paper Series is intended to disseminate a variety of products from the study, including pre-publication (and somewhat more detailed) versions of journal articles, other substantive articles, and methodological papers.

A full listing of occasional papers and other study reports is available from Monitoring the Future, Institute for Social Research, The University of Michigan, P.O. Box 1248, Ann Arbor, MI 48106.

CHANGES IN MARIJUANA USE LINKED TO CHANGES IN PERCEIVED RISKS AND DISAPPROVAL

Monitoring the Future Occasional Paper 19

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ABSTRACT

This article reports trends in marijuana use and related attitudes, and examines alternative hypotheses about the linkage between attitudes and behaviors. Data were obtained using questionnaires administered to nationwide samples of approximately 17,000 high school seniors annually from 1976 through 1985. Trend data showed that perceived risks and personal disapproval increased steadily from 1978 onward, whereas actual use of marijuana reached peak levels in 1978–79 and then declined during the early 1980s. Subgroup trend analyses revealed that when attitudes were held constant there was no decline in rate of marijuana use, supporting the hypothesis that the overall decline found in the total samples was attributable to changes in perceived risk and disapproval. Reversing the subgroup trend analysis procedure, by holding constant the levels of use, provided no support for the alternative hypothesis that changes in use caused the trends in attitudes. The findings are useful theoretically because they indicate that in this area attitudes seem to shape behaviors, rather than the reverse. For those involved in prevention efforts, the findings suggest that realistic information about risks and consequences can play an important role in reducing the demand for drugs.

INTRODUCTION

Young people's attitudes and behaviors with respect to marijuana have undergone some important changes during the course of the past decade.[1] Annual surveys of high school seniors have documented a number of these trends, including the following (reported most recently in Johnston, O'Malley, & Bachman, 1986):

1. Seniors' beliefs that people risk harming themselves (physically or in other ways) by using marijuana declined during the mid-seventies, but such concerns about risks rose strongly and steadily each year after 1978.

2. Disapproval of marijuana use declined from 1975 through 1977, remained much the same in 1978, and since then increased with each succeeding class of seniors.

3. The percentages of seniors using marijuana on a regular basis rose during the mid-seventies, reached peak levels in 1978 and 1979, and then showed a fairly steady decline during the early eighties.

We have interpreted the correspondence among these trends as suggesting that they are causally connected; that is, it appears that beginning in 1978, rising health concerns led increasing proportions of seniors to avoid the use, or at least the frequent use, of marijuana (Johnston, Bachman, & O'Malley, 1980, and subsequent publications). In other words, we believe that the changing attitudes of succeeding classes of high school seniors directly contributed to the changing rates of marijuana use. Further evidence in support of this interpretation was provided by Johnston (1985), who reported a considerable increase in the proportion of marijuana quitters (and, to a lesser extent, marijuana abstainers) who attributed their own non-using behavior to their concerns about possible physical and/or psychological damage.

The "attitudes shape behaviors" hypothesis outlined above is not, however, the only plausible explanation linking attitudes to behaviors. It has also been argued that people modify their attitudes as necessary in order to bring them into line with their behaviors (see reviews by Cialdini, Petty, & Cacioppo, 1981; Cooper & Croyle, 1984; Liska, 1984; Schuman & Johnson, 1976). Classic cognitive dissonance theory (Festinger, 1957), as well as impression management theory (Tedeschi, Schlenker, & Bonoma, 1971; Ungar, 1980), suggests that actors may be motivated to make their attitudes consistent with their behaviors. Moreover, self-perception theory (Bem, 1972) argues that in many cases actors infer their attitudes from their behaviors. According to these theories, situational factors, rather than attitudes, guide behavior.

These "behaviors shape attitudes" hypotheses imply that those who do not use marijuana on a regular basis are consequently more willing and able to acknowledge risks associated with such use. This interpretation may be more persuasive when applied to the trends in disapproval: Seniors who do not use marijuana on a regular basis are thus more likely to feel and express disapproval of such use. Within this theoretical perspective, any changes over time in drug use would be attributed to environmental forces that directly

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[1]Throughout this article we use the term "attitudes" quite broadly, so as to include both *beliefs* about risks of harm in marijuana use and also *evaluations* (degree of disapproval) of marijuana use. We recognize that many distinctions have been made within the broad domain of attitudes (see Oskamp, 1977, for a summary); however, such distinctions have not seemed necessary for our present purposes.

influence behavior, such as changes in law enforcement or the availability of drugs, rather than to changes in attitudes.

The differences between the two hypotheses presented above are important from both theoretical and practical standpoints. On the theoretical side, there is an ongoing interest in the extent to which attitudes really do cause or influence behaviors, rather than simply echo them (Cialdini et al., 1981; Cooper & Croyle, 1984; Liska, 1984; Schuman & Johnson, 1976). On the practical side, it may be of considerable value in drug abuse prevention efforts if it can be demonstrated that changed views about the health risks of marijuana really do play an important role contributing to reductions in actual use.

Our purposes in the present paper are (a) to document in some detail the parallel trends in high school seniors' attitudes and behaviors with respect to marijuana use, and (b) to use this and other evidence to draw implications about the causal links between attitudes and behaviors involving the use of drugs. Several other studies have been done concerning attitudes and behavior with regard to drug use (e.g., Acock & DeFleur, 1972; Andrews & Kandel, 1979; Kahle & Berman, 1979; McAlister, Krosnick, & Milburn, 1984; Sherman, Presson, Chassin, Bensenberg, Corty, & Olshavsky, 1982). These studies have usually relied on data collected at only one time point, or panel studies with relatively short follow-up periods. For example, Kahle and Berman (1979) had a two-month interval between time points, while Andrews and Kandel (1979) had an interval of five to six months. The former study used cross-lagged correlation analysis to estimate the relationships between attitudes and behaviors, while the latter study used cross-lagged regression analysis. Both studies found that, for the relatively short time periods examined, attitudes had stronger effects on subsequent behavior than behavior had on later attitudes. In the present study, we use repeated cross-sections to analyze trends, and we examine the relationships between attitudes and behavior over a much longer time interval (1976–1985)—a period which, as noted above, involved major changes in both attitudes and use.

Our analysis focuses on the two hypotheses introduced above; however, we acknowledge that these two interpretations are not mutually exclusive, nor do they exhaust the range of possible causal interpretations. Those caveats notwithstanding, we think that the findings presented below offer strong support for one of the two hypotheses and no support for the other.

We realize, of course, that the causal relationships that hold for drug use may not hold for other types of attitude-behavior relationships. Bem (1972), for example, postulated that people are likely to infer their attitudes from their behaviors when internal cues are weak or ambiguous, but this is not likely to be the case for many types of drug use. Moreover, drug use is an important behavior that people are likely to have thought about, with many students basing their attitudes upon direct personal experiences. Again, this is likely to increase the extent to which attitudes predict to future behavior (Sherman et al., 1982).

Before presenting our findings, let us consider several predictions which can be derived from the two hypotheses outlined above. One obvious prediction is that actual use of marijuana should be strongly correlated with attitudes about marijuana: Those who perceive considerable risks in marijuana use, and/or who disapprove of such use, should be relatively unlikely to use marijuana on any regular basis; conversely, those who use marijuana on a regular basis should be relatively unlikely to express strong disapproval or perceive high risk. Such a correspondence between attitudes and behaviors is required by both hypotheses, but it will not help us discern whether one is more correct than the other. A more dynamic analysis, however, will permit the testing of differential predictions about

trends from one senior class to another based on the two competing hypotheses.

As we noted at the outset, from 1978 or 1979 onward marijuana use has been trending downward while perceived risks and disapproval have been trending upward. The first hypothesis, which states that attitudes shape behaviors, suggests the following interpretation of these trends: As increasing proportions of students each year after 1978 perceived "moderate risk" or "great risk" in the regular use of marijuana, fewer and fewer remained who were willing to smoke marijuana on a regular basis. In other words, the decreased proportions of users from 1978 onward occurred *because of* the increased proportions of those concerned about health effects. If this is the sole basis for the relationship, then if we hold health concerns constant at any particular level we should observe no decline in usage rates from one year to the next. Thus, for example, if we focus only on those who perceived "no risk" in regular marijuana use, we should find a relatively large proportion of regular users each year, with no decline from 1978 onward. Similarly, if we focus only on those who perceived "great risk" in regular use, we should find very few regular users, again with no important trend from one year to the next. This prediction based on the first hypothesis can now be stated more formally as follows:

Prediction 1: With attitudes held constant, marijuana use will show no change from one year to another.

The second hypothesis states that behaviors shape attitudes. Thus in the present analysis this hypothesis would indicate that attitudes about marijuana became less favorable after 1978 *because of* the decreased proportions of marijuana users. In other words, non-users were not much more critical of marijuana in later years—there were just more of them. Similarly, the regular users did not grow less accepting of marijuana—there just came to be fewer regular users (due to other reasons). The prediction based on this hypothesis can be stated as follows:

Prediction 2: With marijuana use held constant, attitudes about marijuana will show no change from one year to another.

It is important to recognize that these two predictions deal only with trends from one year to another. They do not deal with the wide range of individual differences which are associated with marijuana use (see Bachman, Johnston, and O'Malley, 1981, for an examination of factors predicting which individuals are more likely to use marijuana, and also alcohol and other drugs). But since our purpose here is to learn more about why a drug such as marijuana may rise and then fall in popularity, it is appropriate that our focus be on trends across time.[2]

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[2]Strictly speaking, the analyses which follow can be interpreted as documenting either secular trends or cohort differences. In other words, lower levels of marijuana use among seniors in the class of 1985, compared with those in the class of 1979, could reflect either overall historical trends during that six-year interval or (relatively stable) differences between the two graduating classes. In other analyses we have examined this issue at length, and have concluded that the major change in marijuana use during this interval reflects secular trends rather than cohort differences (O'Malley, Bachman, and Johnston, 1984). Accordingly, in the present report our interpretation will be in terms of time trends, and we assume that the patterns shown here based on successive classes of high school seniors apply to youth and young adults in general during the late seventies and early eighties.

METHODS

Subjects

The data for our analyses were obtained from the Monitoring the Future project, an ongoing study of youth conducted by the University of Michigan's Institute for Social Research. Because the study design has been described extensively elsewhere (Bachman & Johnston, 1978; Bachman, Johnston, & O'Malley, 1985; Johnston, O'Malley, & Bachman, 1986), only the key features are noted here. The project involves surveys of nationally representative samples of high school seniors, conducted each year since 1975. The present analysis deals with data collected from ten graduating classes, 1976 through 1985. (Data from the class of 1975 were not included because some differences in questionnaire formats for that year might have affected findings.)

A multistage procedure (Kish, 1965) was employed to select samples representative of all seniors in the 48 coterminous states: Stage 1 selected particular geographic areas, Stage 2 selected one or more high schools in each area, and Stage 3 selected seniors within each high school.

Data were collected in approximately 115 public and 15 private high schools each year, via questionnaires administered in classrooms by locally based Institute for Social Research representatives and their assistants. Student response rates averaged 80 percent across the ten surveys, with obtained sample sizes of approximately 17,000 per year. For most findings presented here, however, sample sizes were approximately 3,000 to 3,500; this is because each annual survey included five different questionnaire forms, and the items dealing with beliefs and attitudes about marijuana appeared in single forms. (Each of the five forms was administered in all sampled schools; single form samples were random subsets of the total sample each year.)

Measures

The complete questionnaire items dealing with marijuana use, perceived risks of marijuana use, and personal disapproval of marijuana use are reproduced in Table 1. In the analyses which follow, we rely primarily on the measure of marijuana use during the past month. We are particularly interested in "monthly marijuana users" defined as all those who reported using marijuana at least once during the past month, and in the smaller subgroup of "daily marijuana users" defined as those who reported using 20 or more times during the past month.

The items on marijuana use appeared in all five questionnaire forms, thus providing data on the full samples (except for missing data). The items on perceived risks appeared in Form 5 only, and those on disapproval appeared in Form 3 only. As a result, very slight differences in marijuana use trends are evident depending upon whether we are presenting findings for the total sample, the Form 5 subsample (when use is cross-tabulated with perceived risks), or the Form 3 subsample (when use is cross-tabulated with disapproval). All such differences are trivial and do not affect our conclusions.

Table 1

Complete Questionnaire Items

Question Text	Responses
Forms 1-5	
19. On how many occasions (if any) have you used marijuana... (Mark one circle for each line.)	0 Occasions 1 – 2 Occasions 3 – 5 Occasions 6 – 9 Occasions 10 – 19 Occasions 20 – 39 Occasions 40 or More
a...in your lifetime?	
b...during the last 12 months?	
c...during the last 30 days?	
Form 3 Only	
28. Individuals differ in whether or not they disapprove of people doing certain things. Do YOU disapprove of people (who are 18 or older) doing each of the following? (Mark one circle for each line.)	Don't Disapprove Disapprove Strongly Disapprove
b. Trying marijuana (pot, grass) once or twice	
c. Smoking marijuana occasionally	
d. Smoking marijuana regularly	
Form 5 Only	
23. The next questions ask for your opinions on the effects of using certain drugs and other substances. First, how much do you think people risk harming themselves (physically or in other ways), if they...	No Risk Slight Risk Moderate Risk Great Risk Can't Say, Drug Unfamiliar
b. Try marijuana (pot, grass) once or twice	
c. Smoke marijuana occasionally	
d. Smoke marijuana regularly	

RESULTS AND DISCUSSION

Correlations Between Attitudes and Marijuana Use

As an initial step in the analysis, we examined the correlations between an index of marijuana use and an index for each of the attitude dimensions. Marijuana use showed strong and very consistent negative correlations with disapproval in each of the ten senior classes studied (product-moment correlations ranging from −.65 to −.67). The correlations between marijuana use and perceived risk were nearly as strong during the first few years of the study (−.61 to −.63 in 1976–79), but slightly lower during the later years (−.52 to −.55 in 1982–85).[3] The decline very likely reflects reduced variance in perceived risk (the standard deviation dropped steadily from .96 in 1976 to .76 in 1985), which occurred because increasingly large majorities of seniors came to share the perception that there is great risk in regular marijuana use.

This is clearly a domain in which attitudes are closely linked to behaviors: Those who disapproved of use, and those who perceived the risks to be great, were far less likely actually to use marijuana. But in order to draw conclusions about whether the attitudes caused the behavior, or vice versa, we must turn our attention to trend data.

Overall Trends in Marijuana Use and Attitudes

Univariate trends in marijuana use, perceived risks, and disapproval, based on high school seniors in the ten graduating classes of 1976–1985, are detailed in Table 2. Some of the most striking of these trends, involving monthly and daily use as well as those attitudes which are most compatible with regular use, are shown in Figure 1. From 1977 to 1978 there were relatively small declines in proportions of seniors who saw slight or no risk in regular marijuana use, and in proportions who reported no disapproval of such use; thereafter these proportions dropped sharply each year (except that the "no risk in regular use" trend hit bottom at about three percent in 1981 and then showed little further change). Daily and monthly use also declined, but the declines began later and were a good deal less steep.

The contrasting steepness of trends in Figure 1 is worth noting in some detail. Consider first that in 1976 about 14 percent of seniors saw no risk in regular use, but only about half as many (8.2 percent) actually used marijuana on a daily or near daily basis; by 1979 daily use was at 10.3 percent, but there were fewer (8.9 percent) who saw no risk; and by 1981 only 3.4 percent saw no risk, while twice as many (7.0 percent) were daily users. A contrast in steepness is again evident when we compare monthly marijuana use with proportions who saw slight or no risk in regular use: in 1976–78 just over a third of all seniors saw slight or no risk, and also about a third or more of seniors during that period reported some marijuana use during the past month; by 1985 only 8.4 percent of seniors saw slight or no risk in regular use, but fully one quarter of all seniors had used during the past month. Finally, Figure 1 shows that during the period from 1977 to 1985, when daily use dropped to half of its peak, and monthly use declined by about 10 percent,

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[3]The complete set of correlations, in chronological order from 1976 through 1985, are as follows: −.63, −.61, −.63, −.61, −.57, −.54, −.53, −.52, −.52, −.55.

Figure 1

Trends in Marijuana Use, Perceived Risk, and Disapproval

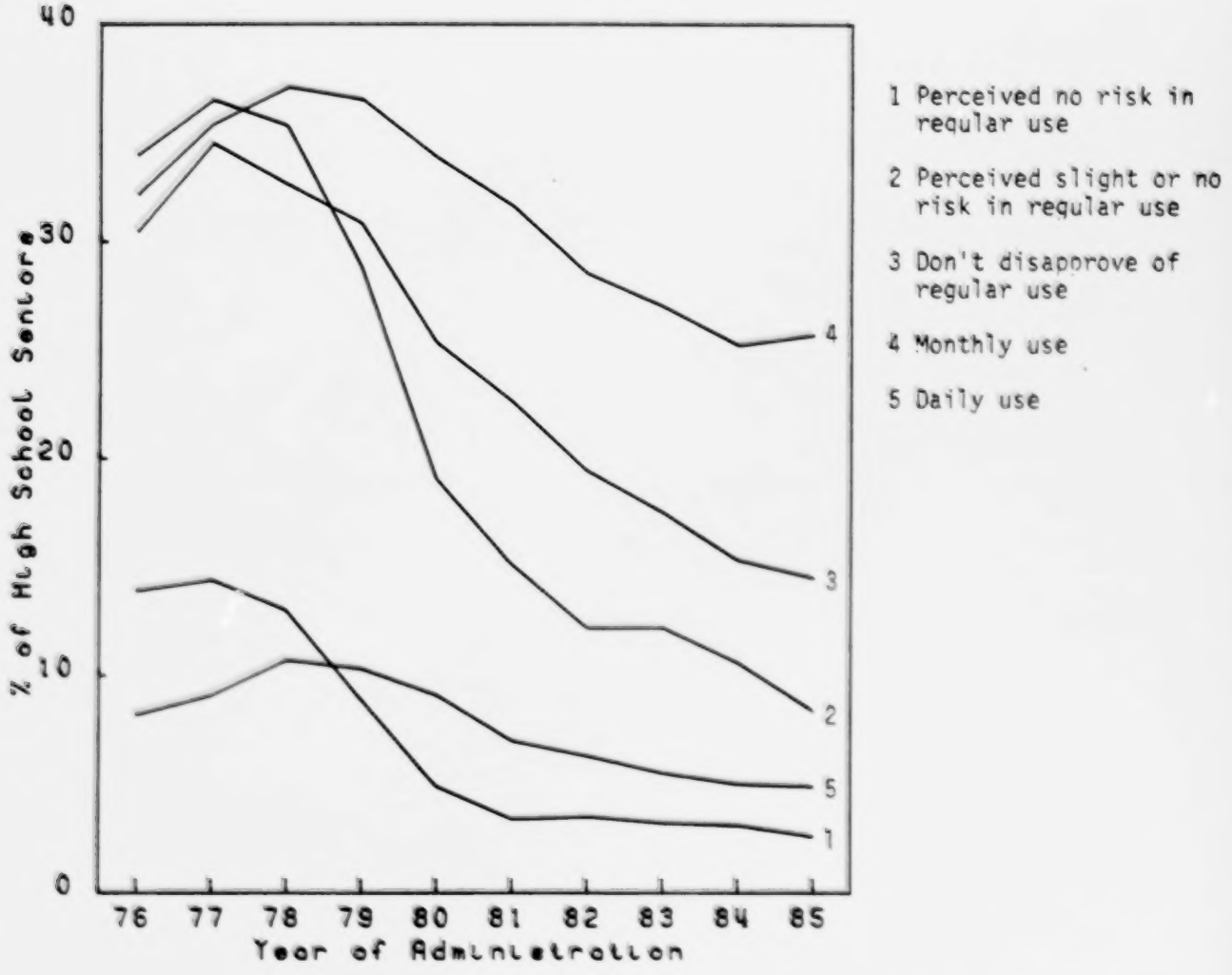

Table 2

Trends in High School Seniors' Marijuana Use and Related Attitudes
(Entries are percentages)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Level of Marijuana Use										
Never used	47.6	43.9	41.0	39.8	39.9	40.7	41.5	43.2	45.4	46.1
Lifetime, not past year	7.9	8.6	8.8	9.4	11.3	13.2	14.1	14.4	14.6	13.3
Past year, not past month	12.2	12.1	13.1	14.2	15.1	14.5	15.8	15.4	14.8	14.9
1–5 times in past month	13.7	15.4	15.1	15.3	15.4	15.5	14.4	14.1	14.0	14.4
6–19 times in past month	10.3	10.9	11.2	11.0	9.2	9.0	7.8	7.4	6.2	6.4
20 or more times in past month	8.2	9.1	10.7	10.3	9.1	7.0	6.3	5.5	5.0	4.9
N (weighted)	14270	15008	18009	15906	15749	17443	17546	16226	15800	15861
Perceived Risk for Experimental Marijuana Use[a]										
No risk	49.7	53.4	54.6	51.5	48.0	42.6	39.9	38.2	35.1	32.6
Slight risk	25.2	23.1	24.9	26.7	29.2	30.5	33.1	34.4	34.5	35.1
Moderate risk	10.4	10.0	8.8	9.9	9.8	11.4	12.0	11.9	12.8	14.7
Great risk	11.4	9.5	8.1	9.4	10.0	13.0	11.5	12.7	14.7	14.8
Can't say	3.3	3.9	3.5	2.5	3.0	2.6	3.4	2.9	2.9	2.8
N (weighted)	2951	3069	3715	3248	3228	3603	3549	3295	3259	3244
Perceived Risk for Occasional Marijuana Use[a]										
No risk	30.0	32.8	32.4	25.9	18.0	13.7	11.6	11.3	9.2	8.4
Slight risk	28.5	28.5	30.8	31.8	35.3	31.8	31.0	28.9	29.0	26.1
Moderate risk	23.1	21.4	21.2	26.2	29.1	33.0	36.0	36.5	36.2	38.3
Great risk	15.0	13.3	12.4	13.5	14.7	19.1	18.3	20.6	22.6	24.5
Can't say	3.4	4.0	3.1	2.7	2.9	2.5	3.2	2.7	2.9	2.7
N (weighted)	2950	3072	3715	3229	3218	3589	3542	3292	3248	3248

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Perceived Risk for Regular Marijuana Use[a]										
No risk	13.9	14.4	13.0	8.9	4.9	3.4	3.5	3.2	3.1	2.6
Slight risk	20.1	22.1	22.3	19.9	14.1	11.7	8.7	9.0	7.5	5.8
Moderate risk	23.8	23.4	26.5	26.5	27.7	25.0	24.1	22.2	19.7	18.8
Great risk	38.6	36.4	34.9	42.0	50.4	57.6	60.4	62.8	66.9	70.4
Can't say	3.5	3.8	3.3	2.7	2.9	2.3	3.3	2.8	2.8	2.4
N (weighted)	2944	3065	3712	3249	3229	3592	3545	3290	3252	3243
Disapproval of Experimental Marijuana Use[b]										
Don't disapprove	61.6	66.6	66.6	65.8	61.0	60.0	54.5	53.7	50.7	48.6
Disapprove	20.0	16.1	16.0	16.8	19.7	21.2	21.7	22.1	22.2	24.3
Strongly disapprove	18.4	17.3	17.4	17.4	19.3	18.8	23.8	24.2	27.1	27.1
N (weighted)	2988	3117	3735	3257	3260	3608	3651	3336	3247	3263
Disapproval of Occasional Marijuana Use[b]										
Don't disapprove	52.2	55.7	56.5	54.7	50.3	47.4	40.9	39.3	36.5	34.2
Disapprove	21.7	21.0	19.6	21.9	22.3	25.1	25.6	24.9	24.8	26.7
Strongly disapprove	26.1	23.3	23.9	23.4	27.4	27.5	33.6	35.9	38.6	39.1
N (weighted)	2985	3115	3729	3255	3259	3602	3641	3332	3246	3260
Disapproval of Regular Marijuana Use[b]										
Don't disapprove	30.5	34.5	32.6	30.8	25.3	22.6	19.4	17.5	15.3	14.5
Disapprove	28.0	26.3	27.8	29.6	27.7	29.3	26.7	27.2	25.1	24.4
Strongly disapprove	41.5	39.2	39.7	39.5	46.9	48.1	53.9	55.2	59.7	61.1
N (weighted)	2973	3116	3726	3248	3260	3599	3629	3323	3244	3254

[a] Based on Form 5 respondents only. N is approximately one-fifth of total N (all seniors) for a given year.

[b] Based on Form 3 respondents only. N is approximately one-fifth of total N (all seniors) for a given year.

the proportions of seniors reporting no disapproval of regular marijuana use dropped by more than half—a 20 percent shift from the high of 35 percent in 1977 to 15 percent in 1985.[4]

The univariate trend analyses presented above show that the shift toward negative attitudes about marijuana began earlier than the decline in actual marijuana use. Specific trends were strongest for attitudes regarding regular marijuana use, and weakest for those regarding experimental use. Additionally, the trends in perceived risk, especially of regular use, were substantially stronger than the trends in disapproval. In our view, this pattern of trends fits nicely with the interpretation that shifting perceptions of risks contributed heavily to rising disapproval of marijuana use, and both of these factors then contributed to the decline in marijuana use during the early eighties. But to examine this proposition more closely, we need to turn to bivariate trend analyses.

Subgroup Trends: Prediction 1

Prediction 1 states that if attitudes about marijuana are held constant, then actual levels of use will not show change from one year to another. The rationale here is that the behavior is dependent upon the attitudes (Hypothesis 1); therefore, although the proportions holding more and less favorable attitudes may change (thus affecting the overall rates of use), for any given level of attitude about marijuana there should be no important shift in use across time. Thus we need to examine trends in marijuana use for subgroups defined in terms of perceived risks (shown in Figure 2) and disapproval (Figure 3).

We begin with Part A of Figure 2, which displays percentages of daily marijuana users among three categories of respondents: those perceiving great risk, those perceiving moderate risk, and those perceiving slight or no risk in regular marijuana use. (We found it necessary to combine the slight risk and no risk categories, because the small numbers in the latter category produced unstable estimates.) Among those who perceived slight or no risk in regular marijuana use, roughly 25 percent used marijuana on a daily or near daily basis (i.e., 20 or more times during the past 30 days), with no clear evidence of a trend upward or downward. Among those perceiving great risk, the proportion of daily users was consistently near zero. Thus these two subgroups provide data fully consistent with Prediction 1. Among those perceiving moderate risk in regular marijuana use, the percentage of daily users actually rose somewhat, especially during the late seventies. The dashed line in the figure reminds us that for the sample as a whole, the proportion of daily users declined by half between the late seventies and the mid-eighties.

Part B of Figure 2 is parallel to Part A, except that it displays monthly rather than

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[4]The fact that attitudes about marijuana have trended more sharply than behaviors can be documented in another way. We pooled the data from 1976 through 1984 (1985 data were not yet available for this analysis) and then carried out one-way analyses of variance to see how much of the total variation in individual responses during the past decade could be "explained" by year. Eta coefficients for perceived risk of trying marijuana, using it occasionally, or using it regularly, were .12, .22, and .28 (respectively); corresponding correlations for the disapproval measures were lower, at .11, .15, and .17. Eta coefficients for the seven-category measures of lifetime, annual, and monthly marijuana use (see Table 1 for wordings) were lower still, at .07, .10, and .10 (respectively); moreover, the eta coefficient for an eleven-category composite of all three marijuana use items was also .10. (All eta coefficients are significantly different from zero, $p < .001$.)

Figure 2

Trends in Marijuana Use, by Level of Perceived Risk of Marijuana Use

Figure 2A

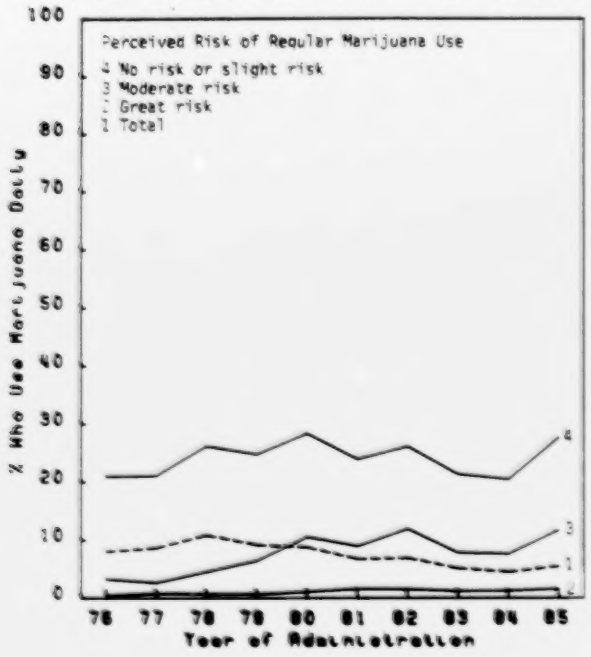

Trends in Daily Marijuana Use, by Level of Perceived Risk of Regular Marijuana Use
Perceived Risk of Regular Marijuana Use
4 No risk or slight risk
3 Moderate risk
2 Great risk
1 Total
% Who Use Marijuana Daily
Year of Administration
76 77 78 79 80 81 82 83 84 85

Figure 2B

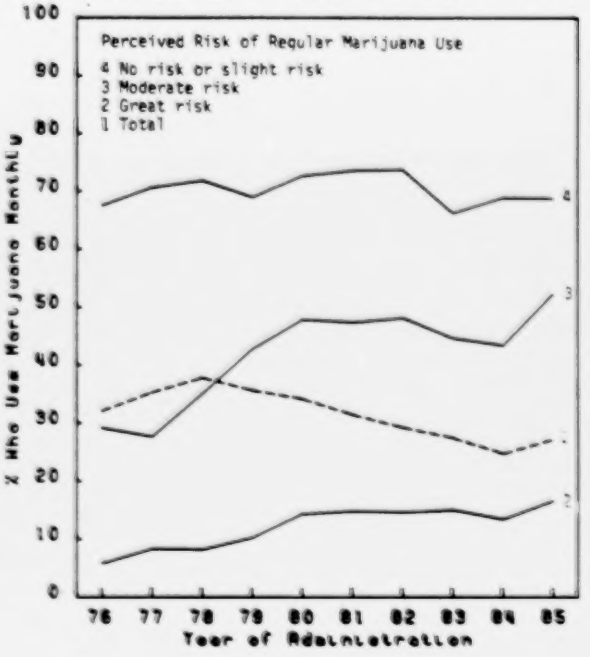

Trends in Monthly Marijuana Use, by Level of Perceived Risk of Regular Marijuana Use
Perceived Risk of Regular Marijuana Use
4 No risk or slight risk
3 Moderate risk
2 Great risk
1 Total
% Who Use Marijuana Monthly
Year of Administration
76 77 78 79 80 81 82 83 84 85

Figure 2C

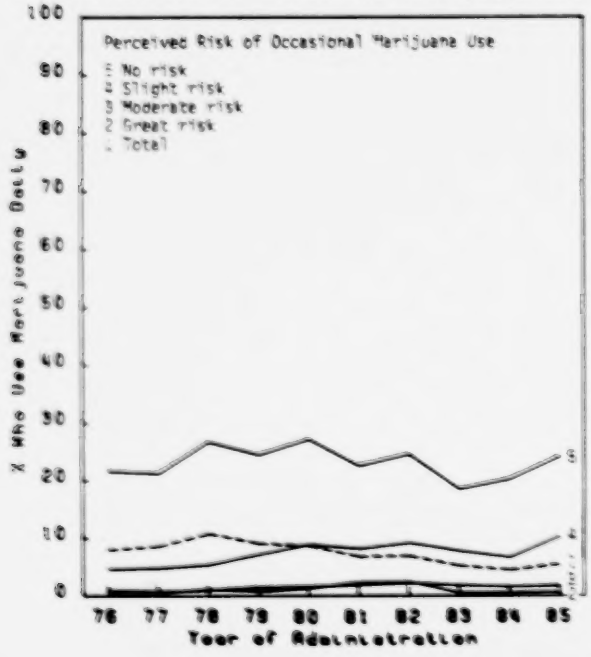
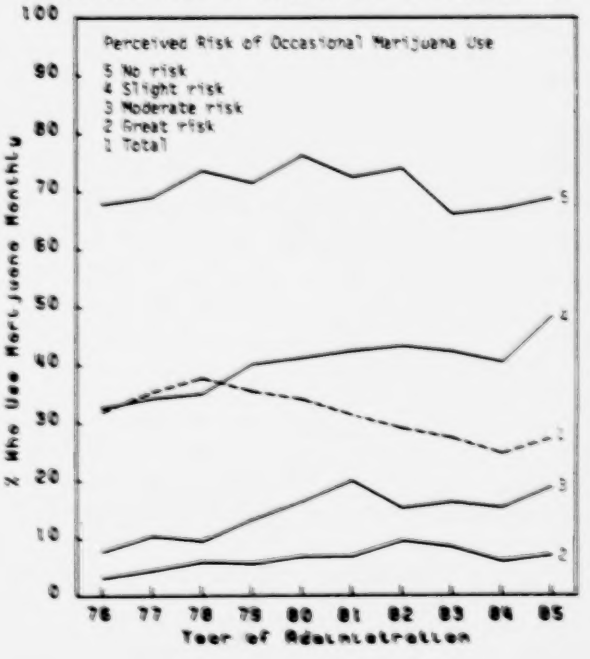

Trends in Daily Marijuana Use, by Level of Perceived Risk of Occasional Marijuana Use
Perceived Risk of Occasional Marijuana Use
5 No risk
4 Slight risk
3 Moderate risk
2 Great risk
1 Total
% Who Use Marijuana Daily
Year of Administration
76 77 78 79 80 81 82 83 84 85

Figure 2D


Trends in Monthly Marijuana Use, by Level of Perceived Risk of Occasional Marijuana Use
Perceived Risk of Occasional Marijuana Use
5 No risk
4 Slight risk
3 Moderate risk
2 Great risk
1 Total
% Who Use Marijuana Monthly
Year of Administration
76 77 78 79 80 81 82 83 84 85

daily marijuana use. Among those perceiving slight or no risk in regular use, more than two-thirds used marijuana at least once during the past 30 days. The proportion of users within that subgroup remained much the same across the ten graduating classes shown in the figure, although we should keep clearly in mind that the size of membership in that subgroup declined dramatically (from more than one third of all seniors, to fewer than one in ten, as shown in Table 2). Among those perceiving moderate risk in regular use, the percentages of monthly users rose substantially (from under 30 percent in 1976 to above 50 percent in 1985). And although we saw in Part A that practically none of those perceiving great risk used marijuana on a daily basis, Part B shows that monthly use within that subgroup rose from about 6–8 percent in the first years of the study to twice that number during the eighties. So here again, more clearly and extensively than in Part A, we see that the decline in use for the total sample (dashed line) contrasts sharply with the subgroup data showing that once perceived risk is controlled, use levels remain constant or actually increase.

Parts C and D of Figure 2 show trends in daily and monthly marijuana use for a slightly different set of subgroups, this time defined in terms of the perceived risks of occasional (rather than regular) marijuana use. (Because occasional use is perceived as less risky than regular use, there are larger numbers of seniors in the "no risk" category; accordingly, we were able to show that subgroup separately in Parts C and D.) The findings in these portions of the figure closely replicate those discussed earlier: once perceived risk is controlled there is no decline in marijuana use—if anything, some subgroups show modest increases in use.

Figure 3 shows trends in daily and monthly marijuana use, this time displayed for subgroups defined in terms of their *disapproval* of regular or occasional use. The findings are generally quite similar to those in Figure 2; once levels of disapproval are controlled, we see no downward trends in proportions of daily or monthly marijuana users.

We take this set of findings to be largely consistent with Prediction 1, and thus supporting Hypothesis 1 (attitudes shape behaviors). It certainly is the case that once we control attitudes, there no longer remains any downward trend in marijuana use. In fact there is some evidence of "unmasking": with perceived risk controlled, marijuana use actually seems to have risen somewhat during the late seventies and early eighties. Especially among those perceiving moderate risk in occasional or regular use, the proportions of monthly users have risen somewhat since 1978. To put it another way, these data suggest that if it were not for the sharp increases in perceived risk since 1978, marijuana use for seniors as a whole might have risen rather than declined.

Subgroup Trends: Prediction 2

We now turn to Prediction 2, which states that with marijuana use held constant, attitudes about marijuana will not change from one year to another. The assumption now being tested is that individuals bring their attitudes into conformity with their behaviors (Hypothesis 2, behaviors shape attitudes). According to this interpretation of the relationship between attitudes and behaviors, the reason that marijuana attitudes have changed in recent years is that fewer seniors actually use marijuana. If that is correct, then if we examine separately those subgroups of students who used marijuana frequently, seldom, or not at all, we should not see much of any upward trends in disapproval or perceived risks.

Figure 3

Trends in Marijuana Use, by Level of Disapproval of Marijuana Use

Figure 3A

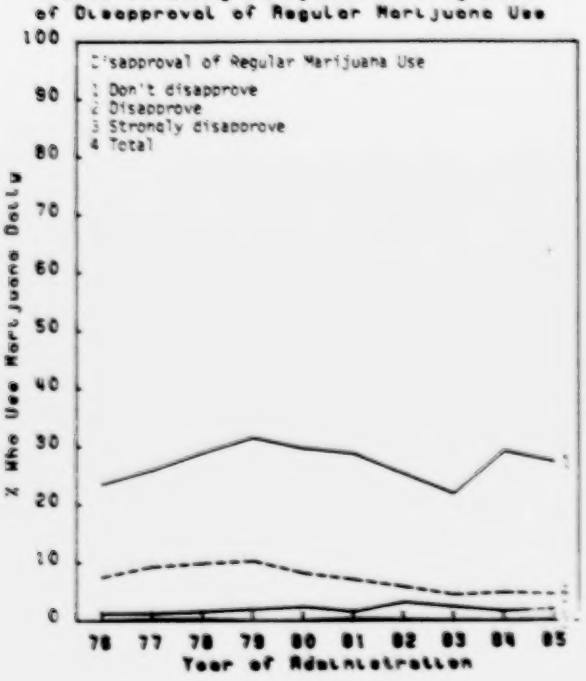

Trends in Daily Marijuana Use, by Level of Disapproval of Regular Marijuana Use
Disapproval of Regular Marijuana Use
1 Don't disapprove
2 Disapprove
3 Strongly disapprove
4 Total
% Who Use Marijuana Daily
Year of Administration

Figure 3B

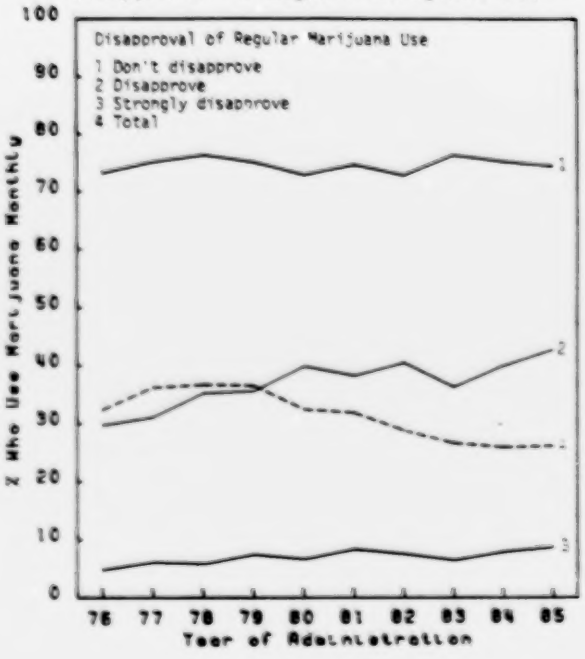

Trends in Monthly Marijuana Use, by Level of Disapproval of Regular Marijuana Use
Disapproval of Regular Marijuana Use
1 Don't disapprove
2 Disapprove
3 Strongly disapprove
4 Total
% Who Use Marijuana Monthly
Year of Administration

Figure 3C

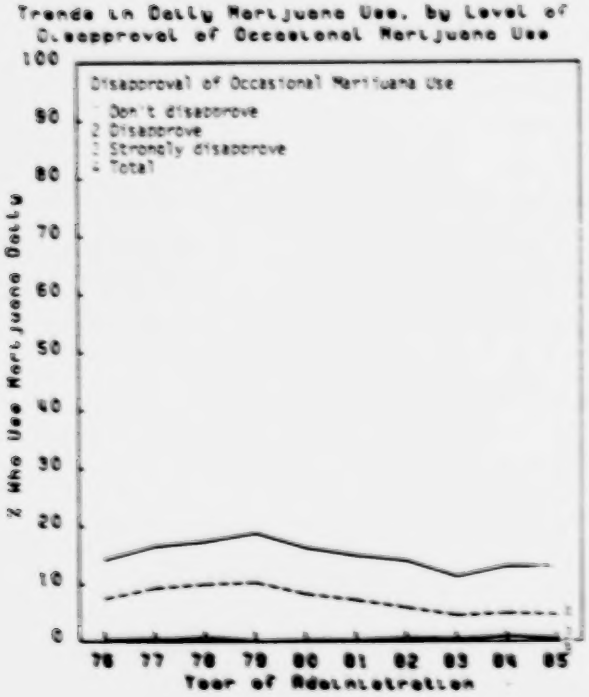
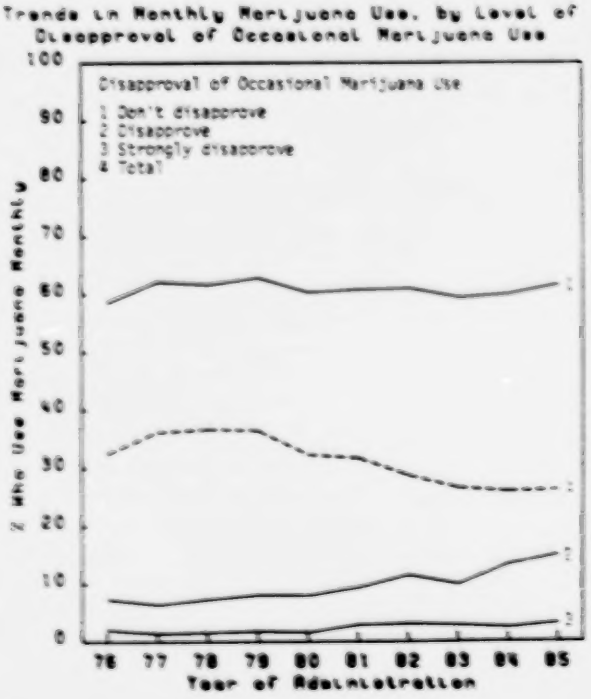

Trends in Daily Marijuana Use, by Level of Disapproval of Occasional Marijuana Use
Disapproval of Occasional Marijuana Use
1 Don't disapprove
2 Disapprove
3 Strongly disapprove
4 Total
% Who Use Marijuana Daily
Year of Administration

Figure 3D


Trends in Monthly Marijuana Use, by Level of Disapproval of Occasional Marijuana Use
Disapproval of Occasional Marijuana Use
1 Don't disapprove
2 Disapprove
3 Strongly disapprove
4 Total
% Who Use Marijuana Monthly
Year of Administration

Figures 4 and 5 present the relevant data. Figure 4 shows trends in perceived risks for each of six subgroups defined in terms of their use of marijuana. Parts A through D plot four different versions of perceived risk: percentages perceiving great risk in regular use (Part A); percentages perceiving great risk in occasional use (Part B); percentages perceiving either great or moderate risk in occasional use (Part C); and percentages perceiving either great, moderate, or slight risk in trying marijuana once or twice (Part D). We note first the similarity in findings for all four parts of the table. Indeed, when we compare Parts A, C, and D, which in some sense "match" levels of perceived risk with frequency of use, the patterns are highly similar. Also quite obvious from this figure, like the earlier ones, is the strong correlation between attitudes and behaviors. Throughout the period studied, the great majority of seniors who never used marijuana also felt there was great risk in regular use, whereas very few of those who used daily held such a view.

Although the differences noted above held true throughout the late seventies and early eighties, there is also clear evidence of change, particularly in the ways recent users of marijuana assessed the risks of occasional or regular use. For example, in Part A of Figure 4 the bottom line shows the rising proportions of daily users who perceived great risk in regular use, a shift from 2 percent in 1978 to 20 percent in 1985. Among those who used 6–19 times during the past month the shift during the same period was from 3 percent to 31 percent perceiving great risk in regular use. The comparable trends were also substantial for the subgroup defined as those who used 1–5 times during the past month (from 14 percent to 57 percent), and the subgroup consisting of those who used during the past year but not in the past month (from 26 percent to 73 percent). In short, the findings in this figure do nothing to support the prediction that controlling for level of use will eliminate the upward trend in perceived risk of marijuana use. On the contrary, most subgroup trends actually rose more sharply than the trend for the total sample (which showed a doubling from 35 percent in 1978, to 71 percent in 1985, who perceived great risk in regular use of marijuana).

The remaining portions of Figure 4 tell the same basic story, albeit a bit less dramatically. Whether we focus on perceptions of great risk associated with occasional use, or expand the focus to include moderate risk with occasional use, or even slight (or more) risk with trying marijuana once or twice, we still see that all subgroups of users or non-users show increased proportions perceiving risk as we move from 1978 to 1985.

Figure 5 presents the data for disapproval, showing that disapproval of regular or occasional marijuana use rose considerably from 1978 through 1985, and controlling for level of actual marijuana use does nothing to reduce that upward trend.

In sum, contrary to prediction 2, we find that controlling for the behavior of marijuana use does nothing to reduce or "explain away" the upward trend from 1978 through 1985 in negative attitudes about marijuana. Subgroups consisting of frequent users, infrequent users, and non-users, all show substantial increases in the proportions who disapprove of marijuana use and perceive that such use is risky.

Figure 4

Trends in Perceived Risk of Marijuana Use, by Level of Marijuana Use

Figure 4A

Trends in Perception of Great Risk in Regular Marijuana Use, by Level of Marijuana Use

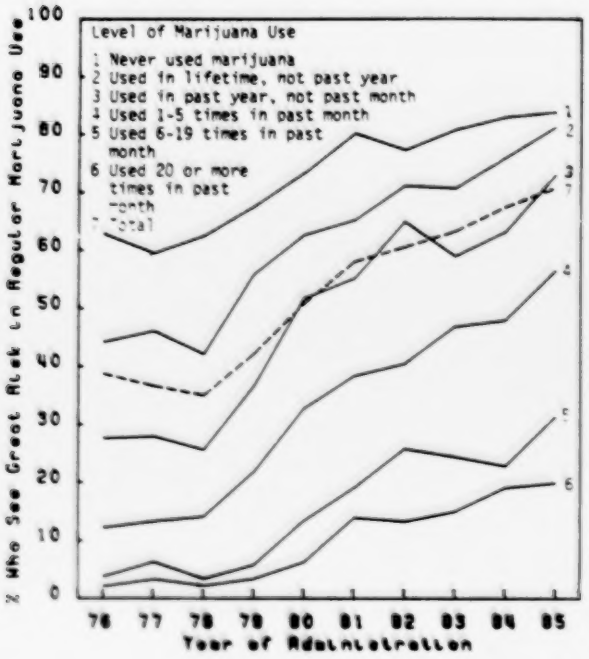


Figure 4B

Trends in Perception of Great Risk in Occasional Marijuana Use, by Level of Marijuana Use

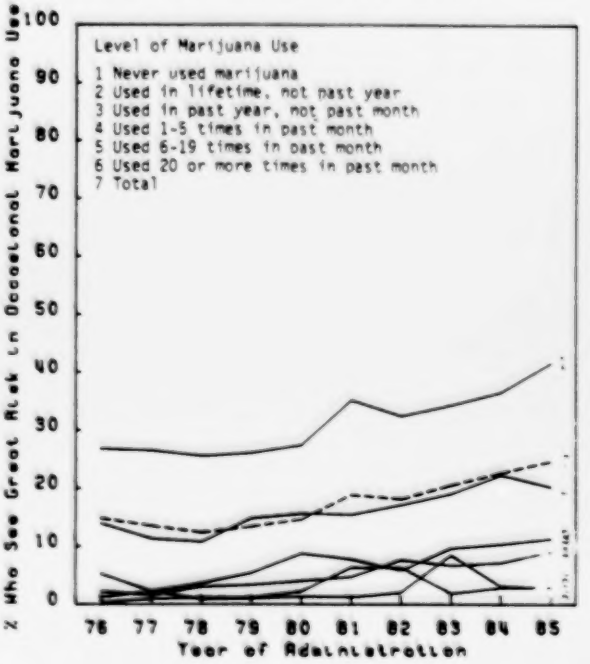


Figure 4C

Trends in Perception of Great or Moderate Risk in Occasional Marijuana Use, by Level of Marijuana Use

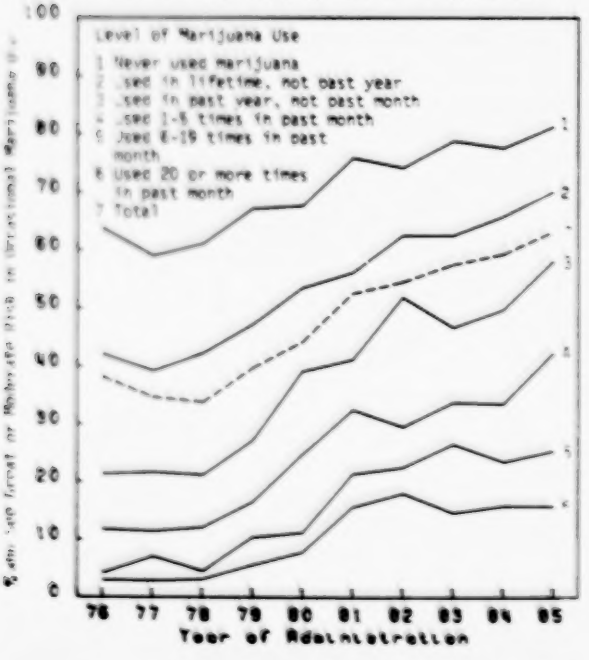


Figure 4D

Trends in Perception of Great, Moderate or Slight Risk in Experimental Marijuana Use, by Level of Marijuana Use

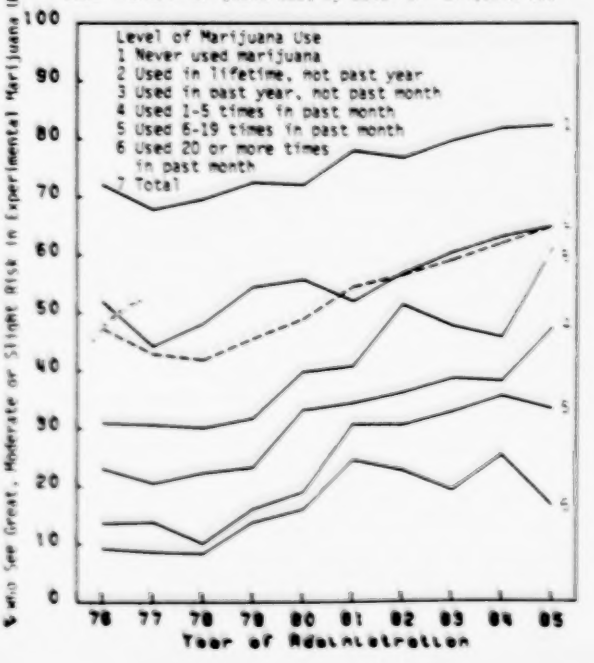


Figure 5

Trends in Disapproval of Marijuana Use, by Level of Marijuana Use

Figure 5A

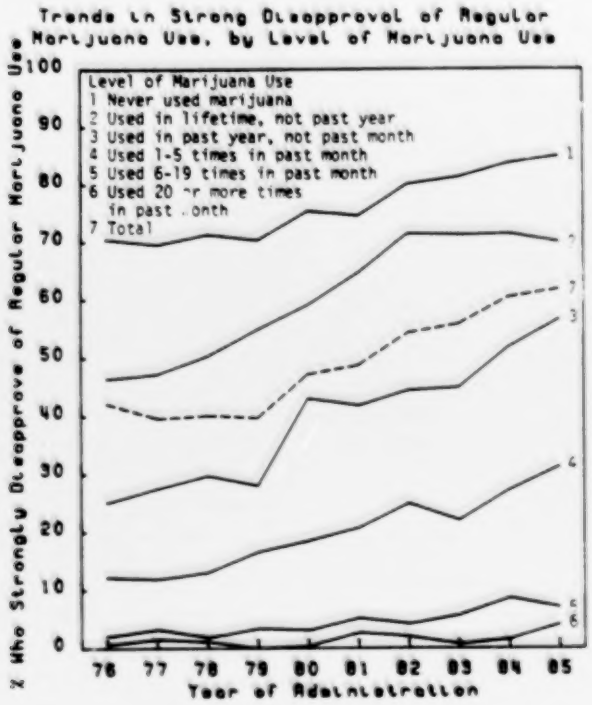
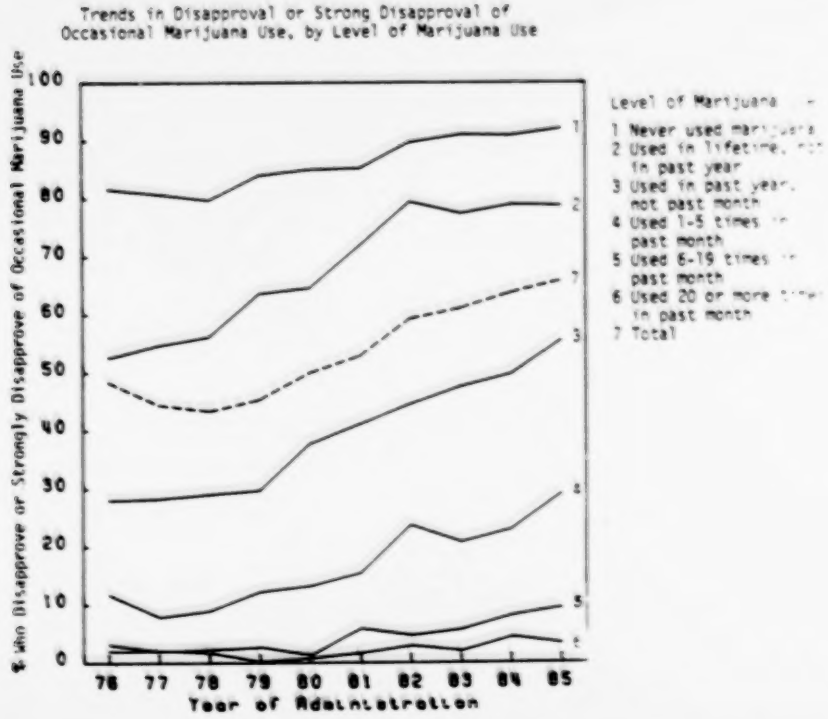

Trends in Strong Disapproval of Regular Marijuana Use, by Level of Marijuana Use
% Who Strongly Disapprove of Regular Marijuana Use
Level of Marijuana Use
1 Never used marijuana
2 Used in lifetime, not past year
3 Used in past year, not past month
4 Used 1-5 times in past month
5 Used 6-19 times in past month
6 Used 20 or more times in past month
7 Total
100
90
80
70
60
50
40
30
20
10
0
78 77 78 79 80 81 82 83 84 85
Year of Administration

Figure 5B


Trends in Disapproval or Strong Disapproval of Occasional Marijuana Use, by Level of Marijuana Use
% Who Disapprove or Strongly Disapprove of Occasional Marijuana Use
Level of Marijuana
1 Never used marijuana
2 Used in lifetime, not in past year
3 Used in past year, not past month
4 Used 1-5 times in past month
5 Used 6-19 times in past month
6 Used 20 or more times in past month
7 Total
100
90
80
70
60
50
40
30
20
10
0
78 77 78 79 80 81 82 83 84 85
Year of Administration

CONCLUDING DISCUSSION

As expected, we found that attitudes and behaviors involving marijuana are closely linked at the individual level. Those with most favorable attitudes were most likely also to be marijuana users; stated another way, those who did not use were most likely to hold critical attitudes about marijuana. While this sort of cross-sectional correlational data could not help us to sort out the extent to which attitudes shape behaviors, or vice versa, our trend analyses comparing ten classes of graduating seniors did offer important evidence bearing on this issue.

First we noted that some shifts in attitudes in recent years started earlier than the shifts in behaviors, and also that they were somewhat stronger. This evidence alone was suggestive: it seemed more likely that the earlier shift in attitudes lay behind the later shift in use, rather than the reverse.

Our analysis of subgroup trends brought the issues into clearer focus. We found that once we controlled for attitudes, the data showed no decline in marijuana use from 1978 onward. In other words, the overall decline in marijuana use that we found when comparing senior classes during the late seventies and early eighties might be attributable entirely to the fact that with each succeeding year after 1978 there were more and more seniors who perceived regular use as risky and disapproved of it. As a matter of fact, among those who perceived great or moderate risk involved in regular marijuana use, the proportions of daily and monthly users actually increased substantially during the late seventies (see Figure 2, Parts A and B). In effect, our findings suggest that it now requires a higher level of concern to deter marijuana use than was true in the middle and late seventies. That observation is confirmed by our analyses showing rising proportions of daily, monthly, and annual users who perceived great risk in regular use of marijuana (see Figure 4, Part A). Why should it now require a higher level of concern to deter marijuana use? It may be that the smaller numbers of seniors who still use marijuana have stronger positive incentives for use, on average, than did the larger numbers of users in the late seventies.

Some additional data bearing on this last point are provided by seniors' responses to a question asking whether during the last 12 months they felt they should reduce or stop use of marijuana. The results, displayed in Table 3, show that from 1978 onward a fairly consistent 22 percent of each senior class reported feeling that they should reduce or stop their use of marijuana. On the other hand, the "carefree users"—seniors who used but did not feel any need to cut down—declined steadily from 29 percent in 1978 to 18 percent in 1985. As a result, and as Table 3 indicates, the proportion of users who in some sense "regretted" their own use shifted from a minority (43 percent in 1978) to a majority (56 percent in 1985). This certainly seems consistent with our findings that increasingly large proportions of marijuana users perceived their behaviors as risky.

For those interested in attitudes-behavior relationships, the present findings provide a fairly clear instance in which attitude shifts during the course of the past decade are "leading indicators" of changes in behaviors. Our interpretation of the trends and associations involving marijuana use and related attitudes is that the attitudes have shaped the behaviors much more than the reverse. But we noted earlier that the two hypotheses explored here do not exhaust the possible interpretations of associations between drug use and related attitudes. Jessor (1985, p. 259), commenting on Johnston's (1985) assertion that changes in attitudes and beliefs about marijuana were causing changes in use, noted that "...it is possible to entertain an equally plausible alternative hypothesis to account for both the increased perception of harm from regular use and the actual decline in regular use, namely, that there has been an increase in the general

conventionality of adolescents during this same historical period. Such an increase in conventionality would lead to less motivation to use marijuana or to seek its effects, and would also imply greater receptivity to messages from authorities about the harmfulness of drug use."

Jessor's alternative hypothesis is an interesting one; however, it seems not to be supported by a number of other analyses of Monitoring the Future data. For example, attitudes about work, education, and social and political institutions show only very weak trends toward greater "conventionality" or "conservatism" among high school seniors (Bachman, Johnston, & O'Malley, in press), certainly nothing nearly as large as the recent changes in attitudes about marijuana. Perhaps more to the point is that analyses now in progress show that while marijuana use and delinquent behaviors are substantially correlated, there has been no downward trend in delinquency in recent years that parallels the decline in marijuana use. In other words, while these and other analyses of our data (e.g., Bachman, Johnston, & O'Malley, 1981) confirm that some individuals are more prone than others to deviant or "problem" behavior (Jessor & Jessor, 1977), the trends in one such problem behavior—marijuana use—have not been accompanied by trends in other such behaviors. Still another set of relevant findings is that recent trends in the use of other illicit drugs, and trends in attitudes about such drugs, have not closely paralleled the changes in attitudes and behaviors with respect to marijuana (Johnston, O'Malley, & Bachman, 1986). If an increase in "conventionality" underlies the decline in marijuana use, why was there no similar decline in prevalence of cocaine use, or of problem drinking?

In sum, the examination of a wide range of trends suggests that those involving marijuana are distinctive in many respects. This, coupled with the more detailed analyses reported herein, lead us to conclude that insofar as recent trends in marijuana use are concerned, the interpretation which best fits the evidence is also the most plausible and parsimonious one: changing attitudes about marijuana have led to changes in behavior.

For those more immediately interested in the practical matters of drug use and its prevention, the present findings provide some good news and some bad news. The good news is that attitudes do indeed appear to be having some effect on behaviors; the rising concerns about the risks of marijuana seem likely to be a primary contributor to the recent downturns in use. The bad news is that these days higher levels of concern (or disapproval) seem necessary to deter use. In other words, our data suggest that if perceived risk had not risen sharply in recent years, then rates of marijuana use might have continued to increase even beyond the high levels reported in the late seventies.

Jessor (1985, p. 258), commenting on the "conventional wisdom" about efforts to reduce drug use, stated that "...the consensus among most researchers is that information alone is not effective in influencing behavior, and that negative information or 'scare tactics' are especially ineffective." We can understand how that conventional view may have come about. Early efforts to dissuade students from use of marijuana often did make exaggerated claims about harmful effects, while students could readily observe that friends and acquaintances who used marijuana did not suffer such disastrous consequences. More recently, however, reports about the health consequences have been more balanced, have received better and more extensive media coverage, and have been based on much more extensive research. Similarly, reports about psychological consequences such as poor school performance, reduced interest in extracurricular activities, and impaired interpersonal relationships have now acquired the ring of truth; regular use of marijuana (and other drugs) has been widespread for a long enough time so that most students have had first-hand contact with at least a few classmates who fit the popular description, "burnout."

For those concerned with prevention, then, we think there are at least two conclusions to be drawn from research linking drug attitudes to actual drug use: First, scare tactics are not likely to work, particularly when contradicted by personal experiences. But second, realistic information about risks and consequences of drug use, communicated by a credible source, can be persuasive and can play an important role in what must ultimately be the most effective means of reducing drug use—reducing demand.

Table 3

Seniors' Feelings that They Should Reduce or Stop Their Use of Marijuana

At any time during the last 12 months, have you felt in your own mind that you should reduce or stop your use of marijuana?	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Yes	18.1	20.0	22.0	23.8	22.7	23.4	23.9	20.0	20.6	22.2
No	27.8	29.7	28.9	28.7	25.1	23.4	20.2	21.5	18.6	17.8
No use last year	54.1	50.3	49.1	47.5	52.2	53.3	55.9	58.5	60.8	59.9
Percentage of users with "regrets"[a]	39.4	40.2	43.2	45.3	47.5	50.0	54.2	48.2	52.6	55.5

[a] Defined as: yes/(yes + no)

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Appendix A
Tables A-1 – A-5B
(Entries are percentages)

The following pages provide percentages corresponding to each of the data points in Figures 1 through 5. Thus, for example, Table A-2A provides the complete set of data used to plot Figure 2A.

It should be recalled that because some of the figures and tables are based on single form data, the percentages of marijuana users will not exactly match those based on the total samples. Thus, for example, the "total" subsample percentages of daily users shown at the bottom of Table A-2A differ slightly from the "daily use" percentages shown at the bottom of Table A-1, because the former are based on Form 5 respondents (who responded to both the marijuana use items and also the item on risks of regular marijuana use) whereas the latter are based on respondents to all five forms (who responded to the marijuana use items).

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985

Table A-1

Trends in Marijuana Use, Perceived Risk, and Disapproval

No risk in regular use[a]	13.9	14.4	13.0	8.9	4.9	3.4	3.5	3.2	3.1	2.6
Slight risk or no risk in regular use[a]	34.0	36.5	35.3	28.8	19.0	15.1	12.2	12.2	10.6	8.4
Don't disapprove of regular use[b]	30.5	34.5	32.6	30.8	25.3	22.6	19.4	17.5	15.3	14.5
Monthly use[c]	32.2	35.4	37.1	36.5	33.7	31.6	28.5	27.0	25.2	25.7
Daily use[c]	8.2	9.1	10.7	10.3	9.1	7.0	6.3	5.5	5.0	4.9

Table A-2A

Trends in Daily Marijuana Use,
by Level of Perceived Risk of Regular Marijuana Use[a]

No or slight risk	20.9	21.0	26.1	24.7	28.3	23.9	26.1	21.3	20.4	27.6
No risk	31.4	33.8	43.3	39.4	40.9	26.3	34.8	28.3	22.5	30.0
Slight risk	13.9	13.0	16.3	18.3	24.1	23.3	22.9	19.0	19.5	26.7
Moderate risk	3.2	2.6	4.5	6.4	10.5	8.9	11.9	7.8	7.6	11.7
Great risk	0.4	0.8	0.7	0.7	1.1	1.6	1.5	1.2	1.3	1.6
Can't say	0.6	3.4	2.9	0.0	0.0	0.8	0.6	3.2	1.2	0.0
Total (based on above)[c]	8.0	8.6	10.8	9.1	8.7	6.7	6.9	5.1	4.5	5.5
N (weighted)	2824	2946	3597	3158	3123	3481	3431	3191	3147	3169

a,b,c Notes for all tables appear on the final page.

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985

Table A-2B

**Trends in Monthly Marijuana Use,
by Level of Perceived Risk of Regular Marijuana Use[a]**

No or slight risk	67.5	70.6	71.8	68.9	72.6	73.5	73.7	66.2	68.9	68.8
No risk	74.1	79.9	83.1	75.6	78.4	69.4	63.2	59.2	55.8	50.1
Slight risk	63.0	64.7	65.3	66.1	70.7	74.6	77.7	68.5	73.9	76.7
Moderate risk	29.1	27.6	35.0	42.7	47.8	47.3	48.1	44.6	43.4	52.3
Great risk	5.8	8.3	8.2	10.2	14.3	14.8	14.6	15.0	13.4	16.6
Can't say	1.3	7.5	9.4	4.0	6.5	5.3	0.6	3.7	3.0	3.4
Total (based on above)[c]	32.1	35.3	37.8	35.6	34.1	31.4	29.2	27.4	24.7	27.2
N (weighted)	2824	2946	3597	3158	3123	3481	3431	3191	3147	3169

Table A-2C

**Trends in Daily Marijuana Use,
by Level of Perceived Risk of Occasional Marijuana Use[a]**

No risk	21.6	21.2	26.7	24.5	27.2	22.6	24.6	18.6	20.3	24.2
Slight risk	4.6	4.8	5.4	7.2	8.9	8.2	9.2	7.8	6.7	10.3
Moderate risk	0.9	0.7	1.0	1.5	1.6	1.9	2.2	1.8	1.6	1.8
Great risk	0.2	0.6	1.1	0.8	1.3	2.3	2.4	0.5	0.6	0.7
Can't say	2.4	2.6	3.2	0.0	0.9	1.8	0.0	3.3	0.0	0.0
Total (based on above)[c]	8.0	8.6	10.8	9.1	8.7	6.8	6.9	5.2	4.5	5.5
N (weighted)	2830	2952	3600	3140	3113	3479	3429	3193	3142	3174

Table A-2D

**Trends in Monthly Marijuana Use,
by Level of Perceived Risk of Occasional Marijuana Use[a]**

No risk	67.8	69.0	73.6	71.5	76.2	72.5	74.0	66.1	67.0	68.8
Slight risk	32.6	34.3	35.1	40.2	41.3	42.5	43.3	42.3	40.5	48.4
Moderate risk	7.7	10.4	9.5	13.2	16.4	20.0	15.2	16.2	15.2	18.8
Great risk	3.1	4.4	5.9	5.6	6.8	6.8	9.5	8.4	5.9	7.0
Can't say	3.1	5.3	6.8	1.0	7.4	6.5	0.0	5.6	1.8	1.7
Total (based on above)[c]	31.9	35.4	37.8	35.5	34.1	31.4	29.1	27.4	24.7	27.3
N (weighted)	2830	2952	3600	3140	3113	3479	3429	3193	3142	3174

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985

Table A-3A
Trends in Daily Marijuana Use,
by Level of Disapproval of Regular Marijuana Use[b]

Don't disapprove	23.5	25.9	28.9	31.5	29.7	28.8	25.3	21.9	29.2	27.4
Disapprove	1.2	1.3	1.6	2.0	2.4	1.6	3.2	2.4	1.7	2.1
Strongly disapprove	0.1	0.4	0.3	0.0	0.1	0.4	0.2	0.1	0.1	0.3
Total (based on above)[c]	7.5	9.3	9.9	10.3	8.2	7.1	5.9	4.5	4.9	4.6
N (weighted)	2858	2995	3604	3155	3163	3502	3506	3229	3132	3172

Table A-3B
Trends in Monthly Marijuana Use,
by Level of Disapproval of Regular Marijuana Use[b]

Don't disapprove	73.2	75.1	76.3	75.0	72.8	74.6	72.8	76.3	75.2	74.4
Disapprove	29.7	31.1	35.2	35.6	39.8	38.2	40.5	36.3	40.0	42.8
Strongly disapprove	4.8	6.1	5.8	7.4	6.6	8.3	7.5	6.4	7.9	8.7
Total (based on above)[c]	32.4	36.2	36.7	36.5	32.4	31.8	28.8	26.6	25.9	26.2
N (weighted)	2858	2995	3604	3155	3163	3502	3506	3229	3132	3172

Table A-3C
Trends in Daily Marijuana Use,
by Level of Disapproval of Occasional Marijuana Use[b]

Don't disapprove	14.2	16.5	17.3	18.7	16.2	14.8	13.9	11.2	13.0	13.0
Disapprove	0.3	0.3	0.7	0.1	0.3	0.2	0.6	0.4	0.9	0.4
Strongly disapprove	0.3	0.5	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.1
Total (based on above)[c]	7.5	9.3	9.9	10.2	8.2	7.1	5.8	4.5	4.9	4.6
N (weighted)	2868	2995	3607	3161	3164	3504	3517	3237	3132	3176

Table A-3D
Trends in Monthly Marijuana Use,
by Level of Disapproval of Occasional Marijuana Use[b]

Don't disapprove	58.6	62.2	61.7	62.9	60.4	60.9	61.1	59.5	60.1	61.7
Disapprove	7.3	6.4	7.3	8.1	8.0	9.4	11.5	9.9	13.4	15.0
Strongly disapprove	2.0	1.4	1.6	1.8	1.6	2.9	3.1	2.8	2.4	3.2
Total (based on above)[c]	32.5	36.2	36.7	36.5	32.4	31.8	28.8	26.6	26.0	26.3
N (weighted)	2868	2995	3607	3161	3164	3504	3517	3237	3132	3176

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985

Table A-4A

Trends in Perception of Great Risk in Regular Marijuana Use, by Level of Marijuana Use[a]

Never used	62.8	59.5	62.5	67.6	73.4	80.2	77.3	80.8	83.0	83.9
Lifetime, not past year	44.2	46.1	42.1	55.9	62.7	65.2	71.1	70.7	76.0	81.3
Past year, not past month	27.6	27.9	25.6	36.6	51.8	55.2	64.9	59.0	63.2	73.0
1–5 times in past month	12.2	13.3	14.1	21.8	32.8	38.4	40.5	46.9	48.0	56.5
6–19 times in past month	3.8	6.3	3.4	5.8	13.4	19.1	25.8	24.4	22.8	31.3
20 or more times in past month	2.1	3.3	2.2	3.4	6.3	13.9	13.3	15.0	19.1	19.9
Total (based on above)	38.7	36.6	35.0	42.2	50.9	58.1	60.6	63.3	67.5	70.8
N (weighted)	2824	2946	3597	3158	3123	3481	3431	3191	3147	3169

Table A-4B

Trends in Perception of Great Risk in Occasional Marijuana Use, by Level of Marijuana Use[a]

Never used	26.8	26.5	25.6	26.2	27.5	35.2	32.5	34.4	36.6	41.6
Lifetime, not past year	13.9	11.3	10.8	14.9	15.7	15.5	17.2	19.1	22.3	20.2
Past year, not past month	5.2	2.3	3.7	5.5	8.8	7.8	5.9	9.7	10.4	11.3
1–5 times in past month	2.2	1.6	3.1	3.4	4.1	4.8	7.7	6.7	7.2	9.1
6–19 times in past month	1.3	2.3	0.9	1.1	1.4	1.3	2.1	8.5	3.1	2.8
20 or more times in past month	0.4	1.0	1.2	1.2	2.3	6.4	6.4	1.9	2.9	2.9
Total (based on above)	14.8	13.5	12.4	13.5	14.7	18.9	18.2	20.6	22.7	24.7
N (weighted)	2830	2952	3600	3140	3113	3479	3429	3193	3142	3174

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985

Table A-4C

Trends in Perception of Great or Moderate Risk in Occasional Marijuana Use, by Level of Marijuana Use[a]

Never used	63.6	58.9	61.0	67.1	67.6	75.8	74.1	78.7	77.5	81.2
Lifetime, not past year	42.0	39.1	42.1	47.1	53.4	56.0	62.4	62.4	65.7	70.0
Past year, not past month	21.3	21.6	21.1	27.1	39.0	41.0	51.7	46.5	49.6	58.0
1–5 times in past month	11.7	11.4	12.1	16.5	24.7	32.3	29.4	33.6	33.4	42.2
6–19 times in past month	4.2	7.0	4.5	10.4	11.2	21.3	22.4	26.4	23.4	25.3
20 or more times in past month	2.9	2.8	3.1	5.6	7.8	15.6	17.9	14.6	15.8	15.7
Total (based on above)	38.1	34.6	33.7	39.6	44.1	52.4	54.4	57.4	59.2	63.1
N (weighted)	2830	2952	3600	3140	3113	3479	3429	3193	3142	3174

Table A-4D

Trends in Perception of Great, Moderate or Slight Risk in Experimental Marijuana Use, by Level of Marijuana Use[a]

Never used	72.0	67.8	69.6	72.5	72.1	78.0	76.8	79.8	81.9	82.4
Lifetime, not past year	51.8	44.2	48.1	54.5	55.8	52.1	56.9	60.5	63.2	65.0
Past year, not past month	30.9	30.6	30.1	31.8	39.9	40.9	51.5	47.8	45.8	61.3
1–5 times in past month	23.0	20.5	22.3	23.3	33.3	34.5	36.3	38.7	38.2	47.4
6–19 times in past month	13.6	13.8	10.1	16.1	19.1	30.8	30.7	32.9	35.6	33.4
20 or more times in past month	9.2	8.6	8.3	13.8	16.1	24.6	22.8	19.3	25.3	16.6
Total (based on above)	47.2	42.8	41.8	45.6	49.0	54.6	56.6	59.2	62.1	64.9
N (weighted)	2829	2949	3599	3157	3124	3492	3435	3195	3154	3167

	Year of Administration									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Table A-5A Trends in Strong Disapproval of Regular Marijuana Use, by Level of Marijuana Use[b]										
Never used	70.4	69.5	71.3	70.3	75.4	74.6	80.1	81.3	83.7	84.9
Lifetime, not past year	46.4	47.2	50.3	54.9	59.1	64.6	71.4	71.2	71.4	69.9
Past year, not past month	25.1	27.5	29.7	28.0	43.0	41.8	44.4	44.9	51.8	56.6
1–5 times in past month	12.2	11.9	13.1	16.6	18.5	20.7	24.9	22.0	27.2	31.2
6–19 times in past month	2.1	3.3	1.9	3.4	3.1	5.2	4.2	5.7	8.6	7.0
20 or more times in past month	0.7	1.6	1.1	0.0	0.4	2.7	2.0	0.7	1.6	4.1
Total (based on above)	42.1	39.6	40.1	39.7	47.2	48.7	54.3	55.8	60.4	61.8
N (weighted)	2858	2995	3604	3155	3163	3502	3506	3229	3132	3172
Table A-5B Trends in Disapproval or Strong Disapproval of Occasional Marijuana Use, by Level of Marijuana Use[b]										
Never used	81.6	80.7	79.7	84.0	85.0	85.2	89.7	91.0	90.9	92.1
Lifetime, not past year	52.6	54.7	56.2	63.6	64.6	71.9	79.4	77.4	79.0	78.8
Past year, not past month	28.0	28.3	29.1	29.8	37.8	41.2	44.6	47.6	49.8	55.6
1–5 times in past month	11.7	7.9	9.0	12.3	13.3	15.5	23.7	20.8	23.0	29.2
6–19 times in past month	3.1	2.0	2.3	2.7	1.3	5.9	4.7	5.7	8.1	9.5
20 or more times in past month	2.0	2.1	1.7	0.2	0.8	1.7	2.9	2.0	4.4	3.3
Total (based on above)	48.3	44.4	43.4	45.4	50.0	52.9	59.3	61.1	63.8	65.9
N (weighted)	2868	2995	3607	3161	3164	3504	3517	3237	3132	3176

[a] Based on Form 5 respondents only. N is approximately one-fifth of total N (all seniors) for a given year.

[b] Based on Form 3 respondents only. N is approximately one-fifth of total N (all seniors) for a given year.

[c] Daily and monthly rates of marijuana use shown in Table A-1 are based on total samples (Forms 1-5) responding to the marijuana use items. Those in Table A-2 are based on Form 5 respondents who responded to the marijuana use items and also answered the questions about perceived risks. Those in Table A-3 are based on Form 3 respondents who responded to the marijuana use items and also answered the questions about disapproval. Thus the "total" rows shown in Tables A-2 and A-3 are not quite identical to each other or to the data in Table A-1, due to slight differences in subsample composition and missing data.

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